

## **DNM Series**



## New series of vertical machining center High quality and efficiency derived from high productivity analysis



DNM series are compact and durable machines created with the combination of optimized function and increased rigidity to satisfy the quality goal of global class and cost-saving. The high productivity analysis is the major principle of the DNM series which have been designed with the user's needs in mind.

## **DNM Series**



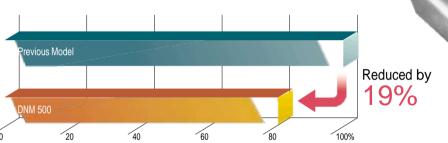
## **High productivity**

**DNM** series

Basic concept structure and operation ensure its capability to get the best results of productivity regardless of any conditions and complexities



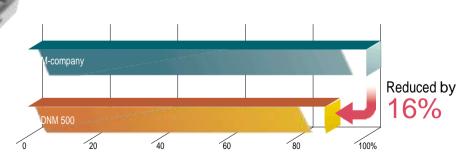
## Comparison of Non Cutting Time



Material: Aluminum (Al6061-T6)

Size: 155 155 50 mm (6.1 6.1 2 inch) No. of tools used: 14 tools

## Comparison of Cutting Time



The results indicated in this catalog may not be obtained due to differences in cutting conditions.

Material : Mold steel (HP4M) Size : 270 270 100 mm (10.6 10.6 3.9 inch)

No. of tools used: 5 tools

## Auto Tool Changer

Faster tool change time using cam increases productivity than previous model.





• This value is based on the motor on-off time and 60Hz.

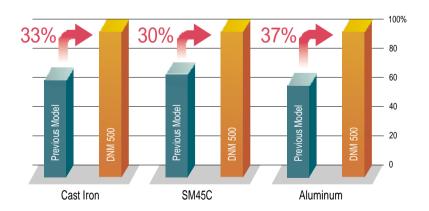


Tool storage capacity

30 tools

40 tools on

## Maximum Chip Removal



## Rapid Traverse

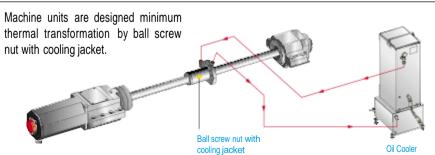


Linear motion guide ways and high speed servomotors apply high rapid axis movement. This reduces non-cutting time and machining time for greater productivity.



		DNM 400/500/650	DNM 400HS/500HS/650HS
X-axis	m/min (ipm)	36 (1417.3)	48 (1889.8)
Y-axis	m/min (ipm)	36 (1417.3)	48 (1889.8)
Z-axis	m/min (ipm)	30 (1181.1)	48 (1889.8)

### Minimum thermal transformation for high accuracy std. only DNM HS series





## Machining Capacity (DNM 500)

Provides high-productivity and high-accuracy in a variety of machining operations

### Face mill - ø80mm (3.15 in.) Face mill (6Z) Machining rate Spindle speed 1500 r/min 64 mm Feedrate (0.08 im (2.52 in.)2700~mm/min~(106.3~ipm)Face mill - ø80mm (3.15 in.) Face mill (6Z) Machining rate

## Carbon steel (SM45C) 432 cm³/min (26.4 in³/min)

## - ø30mm (1.2 in.) Endmill (6Z) 15 mm (0.59 im.)

### Carbon steel (SM45C)

Machining rate 36cm³/min (2.2 in³/min) Spindle speed 222 r/min

Feedrate

80 mm/min (3.1 ipm)



(2.52 in.)

Gray casting (GC25)

691 cm /min (42.2 in /min)

Spindle speed

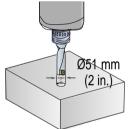
1500 r/min

Feedrate

3600 mm/min (141.7 ipm)



End mill



Machining rate

172 cm /min (10.5 in /min)

Carbon steel (SM45C)

Spindle speed

750 r/min

Feedrate

84 mm/min (3.3 ipm)

### Face mill

3 mm



Aluminum (AL6061)

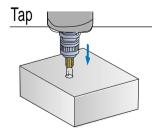
1785 cm<sup>3</sup>/min (109 in<sup>3</sup>/min)

Spindle speed

Machining rate

1500 r/min

5580~mm/min~(219.7~ipm)



Carbon steel (SM45C)

M30 x P3.5

Spindle speed

212 r/min

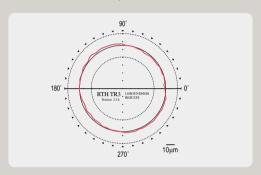
Feedrate

742 mm/min (29.2 ipm)

## **Machining Accuracy**

For increased repeatability and reliability

Designed for exceptional high accuracy and minimized thermal displacement and vibration.



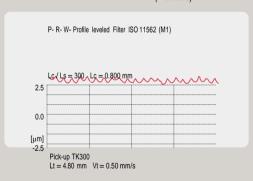
### Roundness

5.40 um

Model: DNM 500

Material: A7075F

 Tool: Endmill ø16mm (ø0.6 in.) (4 blades)



### Roughness

Ra **0.12** µm

• Spindle speed: 8000 r/min

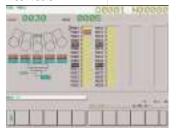
• Feedrate: 1000 mm/min (39.4 ipm)

• The results indicated in this catalog may not be obtained due to differences in environmental conditions during measurement and cutting conditions.

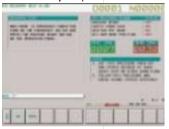
## Easy Operation Package\*

These DOOSAN software packages have been customized to provide user friendly functions.

### Tool Table



ATC Recovery Help



G-code Help



Sensor Status Monitor



Work-Piece Set up Table Moving



Easy Parameter



M-code Help



Tool Load Monitor



## **Operating Console**



### 1. Swivelling Operating Console

An easy-to-use operation panel which can swivel from 0-90

### 2. ATC operating button is arranged to Main Panel

Magazine : CW
Magazine : CCW

This can give much easier operation and maintenance for ATC.

### 3. Portable MPG

Portable MPG makes a workpiece setting easier for the operator.



## Top cover



Top cover can be opened to provide easy access for loading heavy workpieces to the center of the table.

## Easy setup

Unit: mm (inch)



DNM 500

<sup>\*:</sup> Only available in 10.4" Color TFT LCD



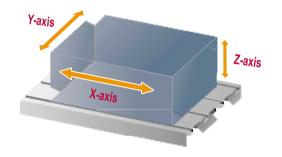
## dity DNM series

umn assembles are designed for high speed and heavy duty machining.

## Compact Structure

### Travel axes

Wide machining range select according to workpiece size



	DNM 400	DNM 500	DNM 650
$ \begin{array}{ll} \hbox{X-axis} & \hbox{mm (inch)} \\ \hbox{Y-axis} & \hbox{mm (inch)} \\ \hbox{Z-axis} & \hbox{mm (inch)} \end{array} $	435 (17.1)	1020 (40.2) 540 (21.3) 510 (20.1)	1270 (50.0) 670 (26.4) 625 (24.6)

The one piece bed is rigid and heavily ribbed Meehanite. These castings remain stable even under the heaviest cutting conditions. Fine grained Meehanite cast iron is used for its excellent vibration absorbing characteristics. The table is fully supported by the saddle in all positions and there is no table overhang. All axes have highly rigid and precise linear motion guideways.

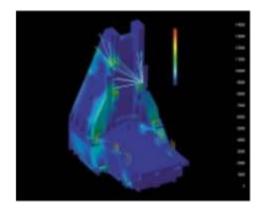
### Static rigidity

The high rigidity structure of DNM has raised the static rigidity up by 30% more than previous model with no weak point through FEM analysis.

### Dynamic rigidity

Improving the frequency response and the damping ability of vibration makes it possible to increase the high eigenfrequency 35% up on the previous model.

FEM analysis used to design a stable body. (FEM: Finite Element Method)





## **High Speed**

**DNM** series

High speed spindle of high quality and rigidity helps increase the efficiency and performance of the machine.

## Spindle Head

Max. spindle speed

DNM 400/500/650

8000 r/min

12000 r/min opt.

DNM 400HS / 500HS / 650HS

15000 r/min



The spindle of DNM HS series is driven by the powerful built-in motor which has 22 kW power and 167 N·m torque.



**DNM 650** 

This enables the thermal growth of Y-axis to be reduced by more than 40% of previous model by pulling the air heated by belt out using the FAN with standard function.



### Oil cooler

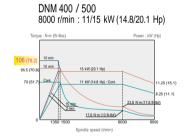
The refrigerated spindle cooling system circulates cooling oil to maintain a constant temperature for high accuracy, regardless of the ambient temperature or cutting conditions.

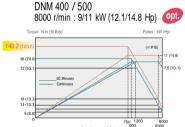


- DNM HS series std.

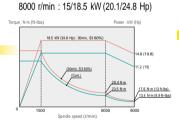
Taper contact

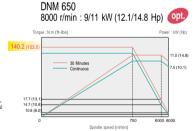
### Spindle power-torque diagram



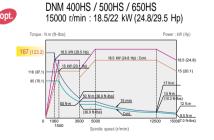


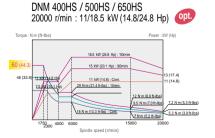






## DNM 400 / 500 / 650 12000 r/min: 11/15 kW (14.8/20.1 Hp) Opt.





# Dual contact (BIG PLUS) std.

The dual contact system offers simultaneous dual contact between the machine spindle face and tool holder flange face.

Flange contact

## **Chip Disposal**

### **DNM** series

Chip treatment from the viewpoint of productivity improvement and environmental countermeasure is important. DNM series offer a variety of chip control equipment to provide enhanced accuracy and better chip removal capabilities.

## Easy chip removal structure

The completely enclosed DNM series guarantee the confinement of chips and coolant to the inside of the machining area. Chips fall into the removable forward mounted chip pan for easy disposal.

### Through spindle coolant on

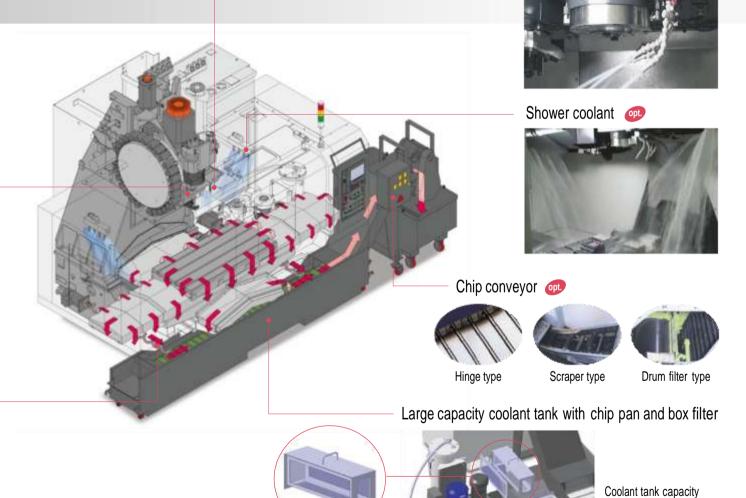


Middle pressure 1.96 Mpa (284.2 psi) High pressure 6.86 Mpa (994.7 psi)



Internal screw conveyor





Easy to discard chips piled up

Flood coolant

DNM 400: 300L (79.3 gal) DNM 500: 380L (100.4 gal) DNM 650: 380L (100.4 gal)

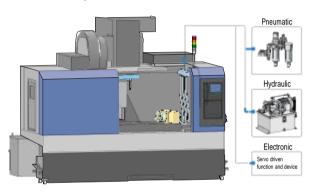
## **Optional Equipment**

**DNM** series

Operator's convenience and operability

### Interface for additional equipment

### Connection example of additional 1 axis interface

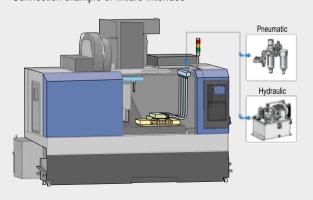




Recommandable rotary table size: DNM 400/500 : ø250 mm (9.84 inch) **DNM 650** : ø320 mm (12.6 inch)

Hydraulic power unit may be additionally necessary according to rotary table specifications.

### Connection example of fixture interface



### Fixture check list (for hydraulic / pneumatic fixtures)

### Pressure source

P/T Hydraulic A/B P/T A/B Pneumatic

### Number of ports

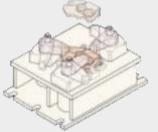
1pair (2-PT 3/8" port) 2pair (4-PT 3/8" port) 3pair (6-PT 3/8" port)

### Hydraulic power unit

Supply scope: User Doosan

(Please check the below detail specification, if you want Doosan to supply.) Use Doosan standard unit

24 L/min (6.3 gal/min) / 4.9 MPa (711 psi)



### Contact Doosan for more information

Special requirement

L/min (gal/min) at MPa (psi)

### Automatic tool length measurement



Automatic workpiece measurement



Minimum Quantity Lublication



Oil skimmer



External Dimensions

Unit: mm (inch)

### **DNM 400**

Top View Side View Table

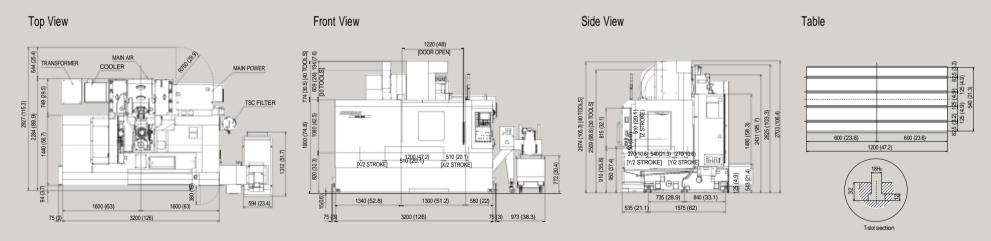
Transformer (opt.) COOLER (opt.) Ar Conditioner (opt.)

Transformer (opt.) Cooler (opt.)

Transformer (opt.) Cooler

T-slot section

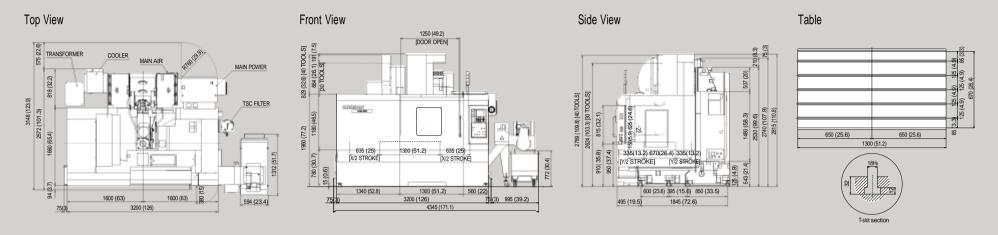
### **DNM 500**



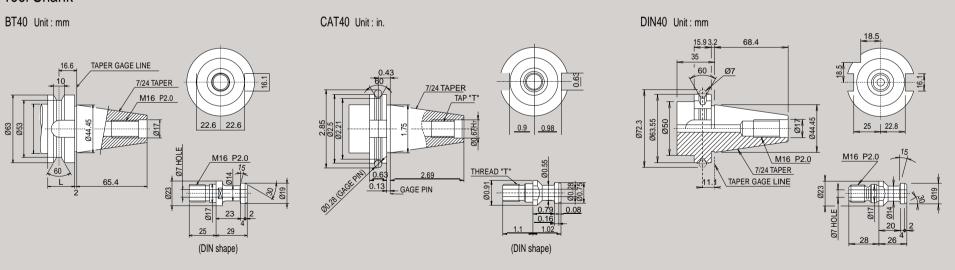
External Dimensions

Unit: mm (inch)

### **DNM 650**



### **Tool Shank**



## **Machine Specifications**

	Features		DNM 400	DNM 500	DNM 650	DNM 400HS	DNM 500HS	DNM 650HS
	X-axis	mm (inch)	762 (30.0)	1020 (40.2)	1270 (50.0)	762 (30.0)	1020 (40.2)	1270 (50.0)
	Y-axis	mm (inch)	435 (17.1)	540 (21.3)	670 (26.4)	435 (17.1)	540 (21.3)	670 (26.4)
Travel	Z-axis	mm (inch)	510	(20.1)	625 (24.6)	510 (	20.1)	625 (24.6)
	Distance from spdl nose to table top	mm (inch)	150 - 660	(5.9 - 26.0)	150 - 775 (5.9 - 30.5)	150 - 660	(5.9 - 26.0)	150 - 775 (5.9 - 30.5)
	Distance from spdl center to column	mm (inch)	512 (20.2)	587 (23.1)	747 (29.4)	512 (20.2)	587 (23.1)	747 (29.4)
T-1.1.	Table size	mm (inch)	920 x 435 (36.2 x 17.1)	1200 x 540 (47.2 x 21.3)	1300 x 670 (51.2 x 26.4)	920 x 435 (36.2 x 17.1)	1200 x 540 (47.2 x 21.3)	1300 x 670 (51.2 x 26.4)
Table loading capaci	Table loading capacity	kg (lb)	600 (1322.8)	800 (1763.7)	1000 (2204.6)	600 (1322.8)	800 (1763.7)	1000 (2204.6)
	Table surface		4-125	x 18H8	5-125 x 18H8	4-125	x 18H8	5-125 x 18H <sub>8</sub>
	Max. spindle speed	r/min		8000 {12000}			15000 {20000}	
Spindle	Spindle Taper				ISO #40 7/	24 Taper		
	Max. Torque	N·m (ft-lbf)		{106} {78.2})	117.1 {106} (86.4 {78.2})		167 {60} (123.2 {44.2})	
Feedrate	Rapid traverse rate (X / Y / Z)	m/min (ipm)	36 / 36 / 30	) (1417.3 / 1417.3 / 1	181.1)	48 / 48 / 48	3 (1889.8 / 1889.8 / 18	89.8)
reediale	Cutting feedrate	mm/min (ipm)		15000 (590.6)			24000 (944.9)	
	Type of tool shank		BT40, CAT40, DIN40					
	Tool storage capacity	ea		cam 30 (cam 40)				
	Max. tool diameter	mm (inch)	Ø80 (3.2) {Ø76 (3.0)}					
Automatic	Max. tool diameter without adjacent tools	mm (inch)	Ø125 (4.9)					
tool changer	Max. tool length	mm (inch)			300 (	11.8)		
	Max. tool weight	kg (lb)			8 (17	7.6)		
	Method of tool selection		memory random					
	Tool change time (tool-to-tool)	S			1.	3		
	Tool change time (chip-to-chip)	S	3	.7	3.9	3.	.7	3.9
	Spindle motor (15 min)	kW (Hp)	15	(20)	18.5 (25)		22 (29.5) {18.5 (25)}	
Motor	Feed motor (X / Y / Z)	kW (Hp)	1.8 / 1 (2.4 / 2	.8 / 2.5 .4 / 3.4)	4 (5.4)	3.0 / 3.0 / 4.0 (4.0 / 4.0 / 5.4)		4.0 / 7.0 5.4 / 9.4)
Power source	Electric power supply (Rated capacity)	kVA	3	30	40		50	
1 OWEI SOUICE	Compressed air supply	MPa (psi)			0.54 (	78.3)		
Tank capacity	Coolant tank capacity	L (gal)	300 (79.3)	380	(100.4)	340 (89.8)	380	(100.4)
Tank dapadity	Lubrication tank capacity	L (gal)			1.4 (	0.4)		
	Machine height	mm (inch)	2703 (106.4)	2703 (106.4)	2815 (110.8)	2703 (106.4)	2703 (106.4)	2815 (110.8)
Machine size	Machine dimension (L x W)	mm (inch)	2092 x 2615 (82.4 x 103)	2284 x 3350 (89.9 x 131.9)	2572 x 3350 (101.3 x 131.9)	2092 x 2615 (82.4 x 103)	2284 x 3350 (89.9 x 131.9)	2572 x 3350 (101.3 x 131.9)
	Machine weight	kg (lb)	5000 (11023.0)	6500 (14329.8)	8500 (18739.0)	5000 (11023.0)	6500 (14329.8)	8500 (18739.0)
Controller	NC system			DOOSAN-FANUC i seri	es		FANUC 32i-A	

<sup>•</sup> Design and specifications are subject to change without notice.

### Standard Feature

- Assembly & operation tools
- Ball screw nut cooling system (HS series)
- Coolant tank & chip pan
- Door interlock for safety
- Flood coolant system
- Installation parts
- · Internal screw conveyor
- Operator call lamp (red, yellow, green)
- Portable MPG
- Splash guard
- Work light
- X, Y, Z Absolute pulse coder

### **Optional Feature**

- 10.4" Color TFT LCD\*\*
- 4th axis preparation
- Automatic power off
- Automatic tool length measurement
- · Automatic workpiece measurement
- Cam ATC (40 tools)
- Chip conveyor & chip bucket
- EZ Guide i
- Minimum Quantity Lubrication
- Oil cooler & spindle head cooling system\*
- Oil skimmer
- Shower coolant
- Test bar

Note: { } are optional.

• Through spindle coolant system

\* : Standard on 12000 r/min 15000 r/min 20000 r/min \*\* : Standard on HS series

<sup>•</sup> Doosan is not responsible for difference between the information in the catalogue and the actual machine.

## NC Unit Specifications

## DOOSAN-FANUC i series

- Controlled axes	3 (X,Y,Z
<ul> <li>Simultaneously controllable</li> </ul>	
	Positioning (G00) / Linear interpolation (G01): 3 axes
	Circular interpolation (G02, G03): 2 axes
<ul> <li>Backlash compensation</li> </ul>	
- Follow up	
- Least command increment	0.001mm (0.0001 inch)
- Least input increment	0.001mm (0.0001 inch)
- Machine lock	all axes / Z axis
	Reverse axis movement (setting screen and M - function)
<ul> <li>Stored pitch error compensa</li> </ul>	
- Stored stroke check 1	Overtraval controlled by software
- Absolute pulse coder	
INTERDOLATION & FEED EL	INOTION
INTERPOLATION & FEED FU	
- 2nd reference point return	G30
- Circular interpolation	G02, G03
Cylinderical interpolation     Dwell	G07.1
	G04
- Exact stop check	G09, G61 (mode)
- Feed per minute	omenta) 0 000 0/
- Feedrate override (10% incre	ements) 0 - 200 %
- Helical interpolation	0.000.00
- Jog override (10% incremen	
- Linear interpolation	G01
- Manual handle	1 units
- Manual handle feedrate	x1, x10, x100 (per pulse)
- Override cancel	M48 / M49
- Positioning	G00
- Rapid traverse override	F0 (fine feed), 25 / 50 / 100 %
Reference point return     Skip function	G27, G28, G29 G31
- Skip Iuliciioli	931
SPINDLE & M-CODE FUNCT	ION
- M- code function	M 3 digits
- Spindle orientation	o algito
- Spindle serial output	
- Spindle speed command	S5 digits
- Spindle speed override (10%	6 increments) 10 - 150 %
oper op or or or or or	,
TOOL FUNCTION	
- Cutter compensation C	G40, G41, G42
- Number of tool offsets	400 ea
- Tool length compensation	G43, G44, G49
- Tool life management	128 sets
- Tool number command	T2 digits
- Tool offset memory C	Geometry / Wear and Length / Radius offset memory
- Tool position offset	G45 - G48
PROGRAMMING & EDITING F	UNCTION
- Absolute / Incremental progr	
<ul> <li>Automatic Coordinate system</li> </ul>	n setting
- Background editing	C72 C74 C76 C00 C00 C00
- Canned cycle	973, 974, 970, 900 - 909, 999
- Canned cycle - Circular interpolation by radi	us programming
Canned cycle     Circular interpolation by radi     Custom macro B	ius programming
- Canned cycle     - Circular interpolation by radi     - Custom macro B     - Decimal point input	ius programming
Canned cycle     Circular interpolation by radi     Custom macro B     Decimal point input     Extended part program editi	ng
- Canned cycle     - Circular interpolation by radi     - Custom macro B     - Decimal point input	ius programming

Level / Marking and final and and	050 / 050
- Local / Machine coordinate system	G52 / G53
- Maximum commandable value	±99,999.999 mm (±9,999.9999 inch) 400 ea
- No. of Registered programs	400 ea
- Optional block skip	M01
- Optional stop - Part program storage	640m (2,100 ft) [256 kB]
- Program number	
	O4-digits
- Program protect - Program stop / end	M00 / M02,M30
- Rigid tapping	G84, G74
- Sub program	Up to 4 nesting
- Tape code	ISO / EIA Automatic discrimination
- Thread cutting	1007 EIA Automatic discimination
- Work coordinate system	G54 - G59
OTHERS FUNCTIONS (Operation, setting	
- 3rd / 4th reference return	α σιοριαγ, σιο
- Additional work coordinate system	G54.1 P1 - 48 (48 pairs)
- Al APC(Advanced Preview Control)	20 block preview
- Alarm display	20 block pieview
- Alarm history display	
- Automatic corner override	G62
- Clock function	902
- Coordinate rotation	G68,G69
- Cycle start / Feed hold	000,000
- Control axis detach	
	Message display when PMC alarm occurred
- Dry run	wessage display when I wo diann occurred
- Graphic display	Tool path drawing
- Help function	Tool patil diaming
- High speed skip function	
- Loadmeter display	
- Look ahead control	G08
	CD, keyboard for data input (small), soft-keys
- Memory card interface	55, Rejourd for data input (smail), soft keys
- Operation functions	Tape / Memory / MDI / Manual
- Operation history display	rupe / memory / mor/ manual
- Optional angle chamfering / corner R	
Polar coordinate command	G15 / G16
- Program restart	0107 010
	set and work offset are entered by G10, G11
- Programmable mirror image	G50.1 / G51.1
- Run hour and part number display	000.17 001.1
- Scaling	G50, G51
- Search function	Sequence NO. / Program NO.
- Self - diagnostic function	coquence (10.7 ) regium (10.
- Servo setting screen	
- Single block	
- Single direction positioning	G60
- Stored stroke check 2	000
OPTIONAL SPECIFICATIONS	
- Additional controlled axes	4 axes in total
- AICC (AI Contour Control) with Hardware	
- Data server	TO DIGON PIONON
- Dynamic graphic display (w/10.4" Color	TFT LCD) Machining profile drawing
- Ethernet function	
- Remote buffer	
- EZ Guide i (Doosan Conversational Prog	ramming Solution)
with 10.4" Color TFT LCD	J
- Tool load monitoring function(doosan)	

- Tool load monitoring function(doosan)

### FANUC 32i-A

<ul> <li>Simultaneously controllable axes</li> </ul>	3 (X, Y, Z)	- Part program sto
- Simultaneously controllable axes FC	ositioning(G00)/Linear interpolation(G01): 3 axes	<ul> <li>Program number</li> </ul>
5 11 1	Circular interpolation(G02, G03): 2 axes	<ul> <li>Program protect</li> </ul>
Backlash compensation     Emergency stop / overtravel		- Program stop / e - Programmable d
- Follow up		- Sub program
- Least command increment	0.001mm (0.0001 inch)	- Tape code
- Least input increment	0.001mm (0.0001 inch)	- Work coordinate
- Machine lock	All axes / Z axis	<ul> <li>Additional work of</li> </ul>
	axis movement (Setting screen and M - function)	<ul> <li>Coordinate syste</li> </ul>
- Stored pitch error compensation	Pitch error offset compensation for each axis	<ul> <li>Extended part pro</li> </ul>
- Stored stroke check 1	Overtravel controlled by software	<ul> <li>Optional angle ch</li> </ul>
- Absolute pulse coder		- Macro executor
INTERPOLATION & FEED FUNCTION		OTHERS FUNCTION
- 2nd reference point return	G30	<ul> <li>Alarm display</li> </ul>
- Circular interpolation	G02, G03	<ul> <li>Alarm history dis</li> </ul>
- Dwell	G04	- Clock function
- Exact stop check	G09, G61(mode)	- Cycle start / Feed
Feed per minute     Feedrate override (10% increments)	0 - 200 %	<ul> <li>Control axis detail</li> <li>Display of PMC a</li> </ul>
- Jog override (10% increments)	0 - 200 %	- Display of Piwic a
- Linear interpolation	G01	- Ethernet function
<ul> <li>Manual handle feed 1 unit</li> </ul>		<ul> <li>Ethernet function</li> <li>Graphic display</li> </ul>
Manual handle feedrate	x1, x10, x100(per pulse)	<ul> <li>Help function</li> </ul>
- Override cancel	M48 / M49	<ul> <li>Loadmeter displa</li> </ul>
- Positioning	G00	- MDI / DISPLAY u
- Rapid traverse override	F0 (fine feed), 25 / 50 / 100 %	<ul> <li>Memory card inte</li> </ul>
Reference point return     Skip function	G27, G28, G29 G31	- Operation function
- Helical interpolation	631	<ul> <li>Operation history</li> <li>Program restart</li> </ul>
- DSQ1(AICC II + Machine condition selection	on function) 80 block preview	- Run hour and par
- Thread cutting, synchronous cutting	or block preview	- Search function
- Program restart		<ul> <li>Self - diagnostic</li> </ul>
<ul> <li>Automatic corner deceleration (Specify Al.)</li> </ul>	Contour control II)	<ul> <li>Servo setting screen</li> </ul>
		Cincle block
- Feedrate clamp by circular acceleration (S	pecify Al Contour control II)	<ul> <li>Single block</li> </ul>
<ul> <li>Linear ACC/DEC before interpolation (Spec</li> </ul>	pecity Al Contour control II) ify Al Contour control II)	<ul> <li>External data inpo</li> </ul>
<ul> <li>Linear ACC/DEC before interpolation (Spec</li> <li>Linear ACC/DEC after interpolation</li> </ul>	ify Al Contour control II)	<ul> <li>External data inp</li> <li>Multi language di</li> </ul>
Linear ACC/DEC before interpolation (Spec     Linear ACC/DEC after interpolation     Rapid traverse bell-shaped acceleration/de	ify Al Contour control II)	<ul> <li>External data inpo</li> </ul>
<ul> <li>Linear ACC/DEC before interpolation (Spec</li> <li>Linear ACC/DEC after interpolation</li> </ul>	ify Al Contour control II)	External data inpu     Multi language di     Stored stroke che
Linear ACC/DEC before interpolation (Spec     Linear ACC/DEC after interpolation     Rapid traverse bell-shaped acceleration/de     Smooth backlash compensation  SPINDLE & M-CODE FUNCTION	ify Al Contour control II)	<ul> <li>External data inp</li> <li>Multi language di</li> </ul>
Linear ACC/DEC before interpolation (Spec     Linear ACC/DEC after interpolation     Rapid traverse bell-shaped acceleration/de     Smooth backlash compensation  SPINDLE & M-CODE FUNCTION	ify Al Contour control II)	External data inpi     Multi language di     Stored stroke che  OPTIONAL SPECIFIC     3-dimensional co     3-dimensional to
- Linear ACC/DEC before interpolation (Spec - Linear ACC/DEC after interpolation - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M-code function - Spindle orientation	ify Al Contour control II)	External data inpi     Multi language di     Stored stroke che  OPTIONAL SPECIFIC     3-dimensional co     -3-di y 4th reference
Linear ACC/DEC before interpolation (Special Linear ACC/DEC dafer interpolation)     Rapid traverse bell-shaped acceleration/de     Smooth backlash compensation  SPINDLE & M-CODE FUNCTION     - M-code function     - Spindle orientation     - Spindle spind output	ify Al Contour control II)  celeration  M3 digits	External data inpi     Multi language di     Stored stroke che      OPTIONAL SPECIFIC     3-dimensional cc     3-dimensional to     3-di / 4th referen     Addition of tool p
- Linear ACC/DEC before interpolation (Spec- - Linear ACC/DEC after interpolation - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION  - M-code function - Spindle serial output - Spindle speced command	ify Al Contour control II) celeration  M3 digits  S5 digits	External data inpi     Multi language di     Stored stroke che  OPTIONAL SPECIFII     3-dimensional co     -3-dimensional to     3rd / 4th referent     Addition of tool p     Additional control
- Linear ACC/DEC before interpolation (Specine Charles ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M-code function - Spindle orientation - Spindle orientation - Spindle speed command - Spindle speed command - Spindle speed command - Spindle speed committed - Spindl	ify Al Contour control II)  celeration  M3 digits	External data inpi     Multi language di     Stored stroke Chel     OPTIONAL SPECIFI     -3-dimensional co     -3rd / 4th referen     Addition of tool p     -Additional work or
- Linear ACC/DEC before interpolation (Spec-Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M- code function - Spindle orientation - Spindle serial output - Spindle serial output - Spindle speed command - Spindle speed override (10% increments) - Spindle speed voerride (10% increments) - Spindle speed voerride (10% increments)	ify Al Contour control II) celeration  M3 digits  S5 digits	External data inpi     Multi language di     Stored stroke Chel     OPTIONAL SPECIFI     -3-dimensional co     -3rd / 4th referen     Addition of tool p     -Additional work or
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M-code (unction) - Spindle orientation - Spindle orientation - Spindle speed command - Spindle speed command - Spindle speed command - Spindle speed committed (10% increments) - Spindle output switching - Retraction for rigid tapping	ify Al Contour control II) celeration  M3 digits  S5 digits	External data inpi     Multi language di     Stored stroke che  OPTIONAL SPECIFII     3-dimensional co     -3-dimensional to     3rd / 4th referent     Addition of tool p     Additional control
- Linear ACC/DEC before interpolation (Specine) - Linear ACC/DEC after interpolation - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION  - M-code function  - Spindle orientation  - Spindle orientation  - Spindle speed command  - Spindle speed command  - Spindle speed command  - Spindle speed commit (10% increments)  - Spindle output switching  - Retraction for rigid tapping  - Rigid tapping	ify Al Contour control II)  celeration  M3 digits  S5 digits  10 - 150 %	- External data inpu - Multi language di - Stored stroke che OPTIONAL SPECIFIC - 3-dimensional to - 3-dimensional to - 3-didisonal contro - Additional contro - Additional work of - SSQ 2 - (AICC II + Machin - Automatic comer - Chopping functio
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC dafer interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M- code function - Spindle orientation - Spindle orientation - Spindle orientation - Spindle spind output - Spindle speed command - Spindle speed command - Spindle speed command - Spindle speed command - Retraction for rigid tapping - Retraction for rigid tapping TOOL FUNCTION	M3 digits  S5 digits  10 - 150 %  G84, G74	External data inpl     Multi language di     Stored stroke che     OPTIONAL SPECIFICA     3-dimensional to     3-dimensional to     3-did to fore che     Addition of tool p     Additional work or     SQ 2     (AICC II + Machin     Automatic comen     Chopping functio     Cylindrical interpo
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC dafer interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M- code function - Spindle orientation - Spindle orientation - Spindle orientation - Spindle spind output - Spindle speed command - Spindle speed command - Spindle speed command - Spindle speed command - Retraction for rigid tapping - Retraction for rigid tapping TOOL FUNCTION	M3 digits   M3 digits   S5 digits   10 - 150 %   G84, G74   G40, G41, G42   G40, G40, G40, G40, G40, G40, G40, G40,	- External data ing  - Multi language di  - Stored stroke che  OPTIONAL SPECIFIC  - 3-dimensional to  - 3-dimensional to  - 3-ddimensional to  - 3-dd 4th referen  - Addition of North  - Additional work c  - SSQ 2  - (AICC II + Machin  - Automatic conner  - Chopping functio  - Cylindrical nierpic  - Dynamic granter
- Linear ACC/DEC before interpolation (Specinear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Minimum and a management of the state of the second process of	M3 digits   M3 digits   S5 digits   10 - 150 %   G84, G74   G40, G41, G42   G4 ea	- External data inp - Multi language di - Stored stroke chi OPTIONAL SPECIFI - 3-dimensional to - 3-dimensional to - 3-dimensional to - 3-d' 4th referen - Addition of tool p - Additional work c - SSQ 2 - (ACC II + Machin
- Linear ACC/DEC before interpolation (Spec Linear ACC/DEC dafer interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M- code function - Spindle orientation - Spindle orientation - Spindle spind output - Spindle spind output - Spindle speed command - Spindle speed overline (10% increments) - Spindle spind spind spind - Retraction for rigid tapping - Retraction for rigid tapping - Rough Lapping - TOOL FUNCTION - Tool nose radius compensation - Number of tool offsets - Tool length compensation	M3 digits   S5 digits   10 - 150 %	- Eviter and data ing  - Stored stroke characteristic and  - Stored stroke characteristic and  - 3-dimensional to  - 3-dimensional to  - 3-dimensional to  - 3-different characteristic and  - 3-different characteristic and  - 4-diditional control  - 4-diditional control  - 4-diditional control  - 4-diditional work or  - 1802 (AICC III + Machina  - Automatic comer  - Chopping function  - Cylindrical Interprication  - 2-dimensional control  - 3-dimensional control  - 3-dimensional control  - 3-dimensional control  - 3-dimensional control  - 4-dimensional control  - 4-
- Linear ACC/DEC before interpolation (Specinear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Microber Smooth backlash compensation  - Spindle orientation - Spindle orientation - Spindle speed command - Tool or speed	M3 digits  M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  64 ea  G43, G44, G49  T2 digits	- External data inp - Multi language di - Stored stroke chi - Stored stroke chi - 3-dimensional - 3-dimensional - 3-dimensional - 3-differential - 4-differential - 4-differenti
- Linear ACC/DEC before interpolation (Special Linear ACC/DEC dater interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION - M- code function - Spindle orientation - Spindle orientation - Spindle orientation - Spindle spind output - Spindle speed command - Spindle speed command - Spindle speed command - Spindle speed command - Retraction for rigid tapping - Retraction for rigid tapping - Retraction for rigid tapping  TOOL FUNCTION - Tod Inose radius compensation - Tod length compensation	M3 digits   S5 digits   10 - 150 %	- Evitan data inp - Mutina data inp - Stored stroke che OPTIONAL SPECIFIC - 3-dimensional to - 3-dimensional to - 3-dimensional to - 3-didinonal contro - Additional work - Looping function - Cylindrical integration - Dunamic graphic - Exponential integration - Exposure in the control of the co
- Linear ACC/DEC before interpolation (Specinear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Microber Smooth backlash compensation  - Spindle orientation - Spindle orientation - Spindle speed command - Tool or speed	M3 digits  M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  64 ea  G43, G44, G49  T2 digits	- External data inp - Multi language di - Stored stroke chi - Stored stroke chi - 3-dimensional - 3-dimensional - 3-dimensional - 3-differential - 4-differential - 4-differenti
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION  - M-code (uprotion - Spindle orientation - Spindle orientation - Spindle spead command - Spindle speed command - Retraction for rigid tapping  Rigid tapping - Rigid tapping - Tool FUNCTION - Tool note radius compensation - Tool fleet command - Tool fleet command - Tool flee management - Gool fleet memory C - Tool length measurement	M3 digits  M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  64 ea  G43, G44, G49  T2 digits	- Evinend data inp - Mutina Inaquage di - Stored stroke che OPTIONAL SPECIFIC - 3-dimensional to - Additional work c - SSQ 2 (AICC III + Machin - Chiprincial interp - Chiprincial interp - Dumaric graphic - Exponential interp - Interpolation type - EZ gode i Doss - When the EZ - Tage format to 7 - Increment system
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC dafer interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Minimum and the shaped acceleration/de - Smooth backlash compensation  - Minimum and the shaped acceleration/de - Smode function - Spindle orientation - Spindle orientation - Spindle spind output - Spindle spind - Spindle spind output - Spindle spind - Spindle spind - Spindle spind - Retraction for rigid tapping  - Retraction for rigid tapping  TOOL FUNCTION - Tool onse radius compensation - Tool offsets - Tool length compensation - Tool offset command - Tool offset management - Tool offset	M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  G43, G44, G49  T2 digits  metry / Wear and Length / Radius offset memory	- External data inp - Multi language di - Stored stroke chi - Additional control - Additional work c - SSQ 2 - (ACC II + Machin - Automatic corner - Chopping funciol - Cylindrical interp - Dumaric crashic - Exponential interp - Interpolation type - EX guide il Doss - When the EX - Tape format to f - Increment system - Figure copying - Handle interruptic - Handle interruptic - Handle interruptic - Stored stroke chi - Stored
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION  - M-code function - Spindle orientation - Spindle speat command - Retraction for ngid tapping  TOOL FUNCTION - Tool one radius compensation - Number of tool offsets - Tool Indignees - Tool offsets - Tool Indignees - Tool offsets - Tool o	M3 digits  M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  64 ea  G43, G44, G49  T2 digits	- External data inp - External data inp - Stored stroke ch - Stored stroke ch - Stored stroke ch - Stored stroke ch - 3-dimensional to - 4-dimensional to - 5-dimensional to - 5-dimensi
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC dater interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Mr. code function - Spindle orientation - Spindle orientation - Spindle orientation - Spindle spind output - Spindle spind - Retraction for rigid tapping - Rigid tapping  TOOL FUNCTION - Tool nose radius compensation - Tool line on of spind - Tool of length compensation - Tool of length compensation - Tool of line management - Tool of spind measurement  - Tool of spind measurement  - ROGRAMMING & EDITING FUNCTION - Absolute / Incremental programming - Auto. Coordinate system setting	M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  G43, G44, G49  T2 digits  metry / Wear and Length / Radius offset memory	- External data inp - Multi language di - Stored stroke chi - Additional control - Additional work c - SSQ 2 - (AICC II + Machin - Automatic comer - Chopping functio - Exponential interpolation type - Dymanic grashic - Exponential interpolation type - EZ Guide i (Doos - When the EZ - Tape format tor 1 - Increment system - Figure copying - Handle interruptic - High speed skep - High speed ske
- Linear ACC/DEC before interpolation (Specine) - Linear ACC/DEC after interpolation (Specine) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - SPINDLE & M-CODE FUNCTION  - M-code function  - Spindle orientation  - Spindle speed command  - Spindle speed command  - Spindle speed command  - Spindle speed committed (10% increments)  - Spindle speed command  - Spindle speed command  - Spindle speed rownide (10% increments)  - Retraction for mg/d tapping  TOOL FUNCTION  - Tool one radius compensation  - Number of tool offsets  - Tool length compensation  - Tool of number command  - Tool length measurement  - Geory Cook of the Cook of th	M3 digits   S5 digits   10 - 150 %	- External data inp - External data inp - Stored stroke ch - Stored stroke ch - Stored stroke ch - Stored stroke ch - 3- dimensional to - 3- dimensional to - 3- dimensional to - 3- differential - 4- differential - 4- differential - 5- differential - 6- differentia
- Linear ACC/DEC before interpolation (Specinear ACC/DEC dater interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Smooth backlash compensation  - Sminde orientation - Spinde orientation - Spinde orientation - Spinde speed command - Retraction for rigid tapping  - Rigid tapping  TOOL FUNCTION  - Tool onse radius compensation - Number of tool offsets - Tool length compensation - Tool of the management - Tool of the memory C - Tool of ength emmory C - Tool of ength emmory C - Tool of ength emmory C - Tool length measurement  PROGRAMMING & EDITING FUNCTION - Absolute / Incremental programming - Auto. Coordinate system setting - Background editing - Canned cycle	M3 digits	- Eviter and data ing  - Mutinal data ing  - Stored stroke chit  - Addition of tool jo  - Additional work  - SSQ 2  - (AICC II + Machin  - Automatic connet  - Chopping tool  - Chipmanic araphic  - Chipmanic araphic  - Exponential interpropriate interpolation type  - EZ Guide i (Doss  - When the EZ  - Tape format for f  - Increment system
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION  - M- code function - Spindle orientation - Spindle speed command - Tool indig tapping  TOOL FUNCTION - Tool of spindle spindle spindle speed - Tool of spindle spi	M3 digits	- External data ing  - External data ing  - Stored stroke che - Addition of isol p - Addition of isol p - Addition of isol p - Additional work c - SSQ 2 - (AltC II - Machin - Automatic comer - Chopping functio - Cylindrical Interpolation by e - EG guide i (Doss - Stored che che che che - Egonemial interpolation by e - EG guide i (Doss - SWhen the Cape - Figure copying - Hand seed skip - Involute interpola - Machining time s - No. of Registered - Number of Isolo - Stored stroke che - Registered
- Linear ACC/DEC before interpolation (Specinear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Smooth backlash compensation  - Spindle orientation - Spindle orientation - Spindle orientation - Spindle speed command - Retraction for rigid tapping  - Roy Intervention - Tool robe programming - Tool (Function) - Tool or under command - Tool file management - Tool of the memor C - Tool length measurement  - PROGRAMMING & EDITING FUNCTION - Absolute / Incremental programming - Auto. Coordinate system setting - Background editing - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Custom manor B	M3 digits	- Eviter and data ing  - Muternal data ing  - Stored stroke cha  - Addition of tool p  - Addition of tool p  - Addition of tool p  - Additional work  - SSQ 2  (AICC II + Machine  - Automatic conner  - Chopping dark  - Longoing under  - Longoing characteristic  - Cylindrical interpr  - Durnaric graphic  - Exponential interpr  - Interpolation type  - EZ Gudie i (Doss  - When the EZ  - Tage format for finerement system  - Figure copying  - High speed skip   Involute interpola  - Machining time s  - No. of Registered  - Number of tool o  - Optional block ski
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Sminde serial output - Spindle orientation - Spindle orientation - Spindle speed command - Retraction for rigid tapping  - Roy Intervention - Tool or	M3 digits	- Eviternal data ing  - Eviternal data ing  - Stored stroke cha  - Addition of tool p  - Addition of tool p  - Addition of tool p  - Additional work  - SSQ 2  - (AICC II - Machin  - Automatic come  - Chopping function  - Exponential interprolation type  - EZ Guide i (10oss  - When the EZ  - Tape format for fincrement system  - Figure copying  - High speed stroke  - High speed stroke  - High speed stroke  - No. of Registered  - Number of tool of  - Optional block sk  - Part pooram sto  - Palyake K function  - Palya
- Linear ACC/DEC before interpolation (Specinar ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - SPINDLE & M-CODE FUNCTION  - M- code function - Spindle orientation - Spindle serial output - Spindle speed command - Retraction for ingid tapping  - Rigid tapping  - Rigid tapping  - Tool ingin compensation - Number of tool offsets - Tool length compensation - Tool number command - Tool fund from the spindle speed - Tool offset memory C - Tool length measurement  - PROGRAMMING & EDITING FUNCTION - Absolute / Incremental programming - Auto, Coordinate system setting - Background editing - Canned cycle - Circular interpolation by radius programming - Custom size 512Kb - Decimal point input - 1/10 interpoa	M3 digits   M3 digits	- External data ing  - External data ing  - Stored stroke che  OPTIONAL SPECIFIC in  - 3-dimensional to  - 3-did his reference  - 4ddition of tool p  - 4ddition of tool p  - 4ddition of tool p  - 4dditional work or  - 589 2  - (AlcC II + Machin  - Automatic come  - Chopping function  - Cylindrical interplute  - Chopping function  - Cylindrical interplute  - Exponential interp  - Interpolation type  - EZ Guide in (Doze  - Fluer copyring  - Handle interruption  - Handle interruption  - Handle interruption  - Handle interruption  - When the  - No. OR registered  - No. OR regis
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC after interpolation) - Rapid traverse bell-shaped acceleration/de - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  SPINDLE & M-CODE FUNCTION  - M-code (function) - Spindle orientation - Spindle orientation - Spindle speed command - Retraction for rigid tapping - Rigid tapping - Rigid tapping - Rigid tapping - TOO, FUNCTION - Tool note radius compensation - Tool funder command - Tool funder command - Tool file management - Gool file management - Cool file file memor C - Tool flength measurement - Rosandhiln & EDITINS FUNCTION - Absolute / Incremental programming - Auto. Coordinate system setting - Background for file file - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle - Circular interpolation by radius programming - Canned cycle	M3 digits	- External data inp - External data inp - Stored stroke cha - Stored stroke - Stored cha - Addition of tool p - Additional work c - SSQ 2 - (AICC II - Machir - Automatic come - Chopping functio - Cylindrical interpr - Dynamic graphic - Exponential interpr - Dynamic graphic - Exponential interpr - EX Guide i Tiboss - When the EX - Tage format for 1 - Increment system - Hand in interprice - Hand in interprice - Individual characteristics - When the EX - Tage format for 1 - Increment system - Hand in interprice - Individual characteristics - When the EX - Tage format for 1 - Increment system - Hand in interprice - No. of Registered - Number of tool o - Polyaracteristics - Pada coordinate - Polar coordinate - Polar coordinate
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC dater interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Minimum of the state of the sta	M3 digits  M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  G44 ea  G43, G44, G46  G40 get ea  G73, G74, G76, G80 - G89, G99  ng  R5 - 232C  G20 / G21	- External data ing  - External data ing  - Stored stroke che OPTIONAL SPECIFIC in  3-dimensional to  - 3-didensional to  - 4-didicinal work or  - 8-50  - 4-didicinal work or  - 8-20  - 4-didicinal work or  - 8-20  - 4-didicinal work or  - 8-20  - 1-4-didicinal work or  - 8-20  - 1-4-didicinal work or  - 1-4-didicinal w
- Linear ACC/DEC before interpolation (Specine) - Linear ACC/DEC after interpolation (Specine) - Rapid traverse bell-shaped acceleration/de - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - SPINDLE & M-CODE FUNCTION  - M-code (function) - Spindle orientation - Spindle orientation - Spindle speed command - Spindle speed command - Spindle speed command - Spindle speed command - Retraction for rigid tapping  - Rigid tapping  - Rigid tapping  - Rigid tapping  - TOO, InUNCTION  - Tool nose radius compensation - Number of tool offsets - Tool length compensation - Tool Interper command - Tool Interper command - Tool Interper command - Tool Interper command - Tool off management - Geol elies the memor C - Tool elies the memor C - Tool offsets - Rosaldwillow (Spindle Spindle	M3 digits   S5 digits   S5 digits   10 - 150 %	- External data inp - External data inp - Stored stroke ch - 3-dimensional to - 4-diditional work c - 580, 2 - (AlCC II - Machin - Automatic connect - Chopping (Limited and Limited - Exponential interp - Interpolational interpolation - Interpolation - Interpolational interpolation - Int
- Linear ACC/DEC before interpolation (Specine Linear ACC/DEC dater interpolation) - Rapid traverse bell-shaped acceleration/de - Smooth backlash compensation  - Smooth backlash compensation  - Minimum of the state of the sta	M3 digits  M3 digits  S5 digits  10 - 150 %  G84, G74  G40, G41, G42  G44 ea  G43, G44, G46  G40 get ea  G73, G74, G76, G80 - G89, G99  ng  R5 - 232C  G20 / G21	- External dala ing  - External dala ing  - Stored stroke che OPTIONAL SPECIFIC in  3-dimensional to  3-dimensional to  3-dimensional to  3-dimensional to  4-didining to

- Part program storage	
	640m (2,100ft) [256kB]m
- Program number	O4-digits
- Program protect	M00 /M02 M20
Program stop / end     Programmable data input	M00 / M02,M30 Tool offset and work offset are entered by G10, G11
- Sub program	Up to 4 nesting
- Tape code	ISO / EIA Automatic discrimination
- Work coordinate system	G54 - G50
Additional work coordinate system (4)	G54 - G59 48 Pair) G54.1 P1 - 48 pairs
- Coordinate system rotation	G68, G69
- Extended part program editing	
- Optional angle chamfering / corner f	?
- Macro executor	
OTHERS FUNCTIONS (Operation, Setti	ng & Display, etc)
- Alarm display	
- Alarm history display	
- Clock function	
- Cycle start / Feed hold	
- Control axis detach	Massage display when DMC plarm appured
Display of PMC alarm message     Dry run	Message display when PMC alarm occurred
- Ethernet function(Embeded)	
- Graphic display	Tool path drawing
- Help function	. ss. paur drawing
- Loadmeter display	
- MDI / DISPLAY unit 10	0.4" Color TFT LCD, Keyboard for data input, soft-keys
- Memory card interface	
- Operation functions	Tape / Memory / MDI / Manual
- Operation history display	
- Program restart	
<ul> <li>Run hour and part number display</li> </ul>	
- Search function	Sequence NO. / Program NO.
- Self - diagnostic function	
- Servo setting screen	
Single block     External data input	
Multi language display     Stored stroke check 2	
Citi da di dila di Conta di Conta di	
OPTIONAL SPECIFICATIONS	
<ul> <li>3-dimensional coordinate conversion</li> </ul>	1
- 3-dimensional tool compensation - 3rd / 4th reference return	
- 3rd / 4th reference return	1001
- Addition of tool pairs for tool life man	
- Additional controlled axes	nagement 1024 pairs
	Max. 5 axes in total
- Additional work coordinate system	G54.1 P1 - 300 (300 pairs)
- DSQ 2	G54.1 P1 - 300 (300 pairs ) 80 block preview
- DSQ 2 (AICC II + Machine condition selection	Max. 5 axes in total   G54.1 P1 - 300 (300 pairs )   80 block preview   on function + Data server + 1GB
DSQ 2     (AICC II + Machine condition selectic     Automatic corner override	Max. 5 axes in total   G54.1 P1 - 300 (300 pairs)   80 block preview   n function + Data server + 1GB    G62
DSQ 2     (AICC II + Machine condition selectic     Automatic corner override     Chopping function	Max. 5 axes in total  G54.1 P1 - 300 (300 pairs)  80 block preview  In function + Data server + 1GB)  G62  G81.1
DSQ 2 (AICC II + Machine condition selection—Automatic corner override—Chopping function—Cylindrical interpolation—Cylindrical interpolation—Cy	Max. 5 axes in rotal G54.1 P1 - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G07.1
DSQ 2 (AICC II + Machine condition selectic     Automatic corner override     Chopping function     Oylindrical interpolation     Dynamic graphic display	Max. 5 axes in total  G54.1 P1 - 300 (300 pairs )  80 block preview  In function + Data server + 1GB)  G62  G81.1
– DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Chopping function - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation	Max. 5 axes in rotal G54.1 PT - 300 (300) pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G81.1 G77.1 Machining profile drawing
- DSQ 2     (AICC II - Machine condition selectic     - Automatic corner override     - Chopping function     - Cylindrical interpolation     - Dynamic oraphic display     - Exponential interpolation     - Interpolation or period interpolati	Max. 5 axes in total  G54.1 P1 - 300 (300 pairs)  80 block preview in function + Data server + 1GB)  G62  G81.1  G07.1  Machining profile drawing
SQ 2     Automatic comer override     Automatic corner override     Chopping function     Cylindrical interpolation     Dynamic graphic display     Exponential interpolation     Interpolation type pitch error comper	Max. 5 axes in rotal G54.1 PT - 300 (300) pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G97.1 Machining profile drawing
- DSQ 2 - Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - EZ Guider (100san inflazore Convers  ⇒ When the EZ Guide i Isosan, the Tape format for FS15	Max. 5 axes in rotal  G54.1 PT - 300 (300) pairs)  80 block preview in function + Data server + 1GB)  G62  G81.1  G07.1  Machining profile drawing issation  sational Programming Solution) with 10.4" Color TFT
SQ 2     Machine condition selectic     Automatic corner override     Chopping function     Oylindrical interpolation     Oylindrical interpolation     Oylindrical interpolation     Dynamic graphic display     Exponential interpolation     Interpolation type pitch error comper     EZ Guide i [Dossan inflacere Convers     When the EZ Guide is used, the	Max. 5 axes in rotal  G54.1 PT - 300 (300) pairs)  80 block preview in function + Data server + 1GB)  G62  G81.1  G07.1  Machining profile drawing issation  sational Programming Solution) with 10.4" Color TFT
- DSQ 2: - Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Oynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - EZ Guide (1) Dosan infracore Convers  ⇒ When the EZ Guide i Is used, the - Tape format for FS15	Max. 5 axes in rotal  G54.1 PT - 300 (300) pairs)  80 block preview in function + Data server + 1GB)  G62  G81.1  G07.1  Machining profile drawing issation  sational Programming Solution) with 10.4" Color TFT
- DSQ 2 + Machine condition selectic - Automatic corner override - Chopping function - Cylindrical interpolation - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Exponential interpolation - Interpolation   Nep pitch error comper - EZ Guide i Doosan Infracore Convert ⇒ When the EZ Guide is used, the - Trape format for FS15 - Increment system 1/10 - Figure copyring - Handle interruption	Max. 5 axes in total  G54.1 Pt - 300 (300 pairs)  80 block preview in function + Data server + 1GB)  G62  G81.1  Machining profile drawing issation sational Programming Solution) with 10.4* Color TFT  Dynamic graphic display cannot application
- DSQ 2 - Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation yet pitch error comper - E2 Guide   Doosan inflazore Convers  → When the E2 Guide is used, the - Tabe format for FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function	Mak 5 axes in rotal G54.1 PT - 300 (300 pairs) 80 block preview In function + Data server + 168) G65 G81.1 G07.1 Machining profile drawing issation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2
- DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - Expudied i Dossan infracore Convert - When the £Z Guide i Soosan infracore - When the £Z Guide is used, the - Tape format for FS15 - Increment system 1/10 - Figure copyring - Handle interruption - High speed skip function	Max. 5 axes in total  G54.1 Pt - 300 (300 pairs)  80 block preview in function + Data server + 1GB)  G62  G81.1  Machining profile drawing issation sational Programming Solution) with 10.4* Color TFT  Dynamic graphic display cannot application
- DSQ 2: - Automatic comer override - Automatic comer override - Automatic comer override - Chopping function - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation Type pitch error comper - EZ Guder   Doosan inflacore Convert  → When the EZ Guder   Doosan inflacore - When the EZ Guder   Toosan inflacore - Tabe format   Dor FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - Involute interpolation - Nachining firms stamp function	Mak 5 axes in rotal  G54.1 PT - 300 (300 pairs) 80 block preview In function + Data server + 168)  G62 G81.1 G07.1 Machining profile drawing Issation Issation Solution with 10.4" Color TFT Dynamic graphic display cannot application  G72.1, G72.2 G02.2, G03.2
- DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation the proper comper - Exponential interpolation - Interpolation type pitch error comper - Exponential interpolation - Interpolation type pitch error comper - Studied (Doosan Inflacore Convert - Subdied (Doos	Max. 5 axes in total  G54.1 PT - 300 (300 pairs)  80 block preview In function + Data server + 1GB)  G82.  G81.  G87.1  Machining profile drawing sation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application  G72.1, G72.2  G02.2, G03.2  1000 ea
- DSQ 2 - Machine condition selectic - Automatic comer override - Automatic comer override - Chopping function - Oylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - EX Guide i (Dossan Infracore Conventive Convention - Tape Conven	Mak 5 axes in rotal G54.1 Pt - 300 (300 pairs) 80 block preview In function + Data server + 168) G65 G81.1 G07.1 Machining profile drawing Issation Issational Programming Solution) with 10.4" Color TFI Dynamic graphic display cannot application G72.1, G72.2 G02.2, G03.2 1000 ea
- DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Automatic corner override - Cylindrical interpolation - Cylindrical interpolation - Cylindrical interpolation - Exponential interpolation - Exponential interpolation - Interpolation type pitch error comper - EX Guide (100san inflacore Convert - When the EX Guide is used, the - Tape format for FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - Involute interpolation - Machining time stamp function - Machining time stamp function - Nor Registered programs - Number of tool olifsets - Optional Block skip addition	Max. 5 axes in rotar  G54.1 PT - 300 (300 pairs) 80 block preview In function + Data server + 1GB) G62 G81.1 G07.1 Machining profile drawing sation Sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2, G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks
- DSQ 2 - Machine condition selectic - Automatic comer override - Automatic comer override - Chopping function - Oylandrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - Expuder il Dosan Infraore Convert - When the EZ Guide i is used, the - Tape tormat for FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - Involute interpolation - Machining time stamp function - No. of Registered programs - Number of tool offsets - Optional block skip addition - Patt opcoram storage	Max. 5 axes in total G54.1 PT - 300 (300 pairs) 80 block preview In function + Data server + 1GB) G65 G81.1 G07.1 Machining profile drawing Issation Sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2, G03.2 1000 ea 99 / 200 / 400 pairs
- DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Exponential interpolation - Interpolation hype pitch error comper - Ex Guide (1) Dosan inflacore Convert - When the EZ Guide i 1) Dosan inflacore Convert - Tape format for F15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - Involute interpolation - Machining time stamp function - Machining time stamp function - No. of Registered programs - Number of tool offsets - Part program storage - Palyaback function	Max. 5 axes in total G54.1 Pt - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G07.1 Machining profile drawing issation Sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2 G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks 512K / 1M / 2M byte
- DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - Ex Guide i (Dosan inflacore Convert - When the £Z Guide i (Dosan inflacore Convert - When the £Z Guide is used, the - Tape format for FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - High speed skip function - Machining time stamp function - Machining time stamp function - Machining time stamp function - No. of Registered programs - Number of tool offsets - Optional block skip addition - Part programs storage - Playback function	Max. 5 axes in total G54.1 PT - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G61.1 G07.1 Machining profile drawing issation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2, G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks 512K / 1M / 2M byte G15 / G16
- DSQ 2 (AICC III + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Overrine oraphic display - Exponential interpolation - Interpolation interpolation - Interpolation interpolation - Interpolation interpolation - Interpolation interpolation - Table format for FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - Involute interpolation - Involute interpolation - No. of Registered programs - Number of bool offsets - Part program storage - Playback function - Part program storage - Playback function	Max. 5 axes in total G54.1 Pt - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G07.1 Machining profile drawing issation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2, G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks 512K / 1M / 2M byte G15 / G16 G12.1 (G13.1
- DSQ 2  - Automatic corner override  - Automatic corner override  - Automatic corner override  - Chopping function  - Cylindrical interpolation  - Cylindrical interpolation  - Synamic graphic display  - Exponential interpolation  - Interpolation type pitch error comper  - Exponential interpolation  - Interpolation type pitch error comper  - Exponential interpolation  - Interpolation type pitch error comper  - Exponential interpolation  - Flught error comper  - High speed skip function  - High speed skip function  - High speed skip function  - Machining time stamp function  - Machining time stamp function  - No. of Registered programs  - Number of tool offsets  - Optional block skip addition  - Part programs storage  - Playback function  - Polar coordinate command  - Polar coordinate command	Max. 5 axes in total G54.1 PT - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G61.1 G07.1 Machining profile drawing issation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2 G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks 512K / 1M / 2M byte G15 / G16 G12.1 / G13.1 G50.1 / G51.1 G50.1 / G51.1
- DSQ 2 (AICC III + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Ownerine graphic display - Exponential interpolation - Interpolation in the process of the p	Max. 5 axes in total G54.1 PT - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G07.1 Machining profile drawing issation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2 G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks 512K / 1M / 2M byte G15 / G16 G12.1 (G13.1 G50.1 / G51.1
- DSQ 2 (AICC II + Machine condition selectic - Automatic corner override - Automatic corner override - Chopping function - Cylindrical interpolation - Cylindrical interpolation - Dynamic graphic display - Exponential interpolation - Interpolation type pitch error comper - Exponential interpolation - Interpolation type pitch error comper - Studied (Doosan Inflacore Convert - When the EZ Guide i Doosan Inflacore - Table format for FS15 - Increment system 1/10 - Figure copying - Handle interruption - High speed skip function - High speed skip function - Machining time stamp function - Machining time stamp function - Machining time stamp function - No. of Registered programs - Number of tool offsets - Optional Block skip addition - Part programm storage - Polar coordinate command - Polar coordinate command	Max. 5 axes in total G54.1 PT - 300 (300 pairs) 80 block preview in function + Data server + 1GB) G62 G81.1 G07.1 Machining profile drawing issation sational Programming Solution) with 10.4" Color TFT Dynamic graphic display cannot application G72.1, G72.2 G02.2 G03.2 1000 ea 99 / 200 / 400 pairs 9 blocks 512K / 1M / 2M byte G15 / G16 G12.1 (G13.1 G50.1 / G51.1

\*) Pre discussion required

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